

REMARKS

Upon entry of the above amendments, claims 70 and 72-121 will remain pending.

Applicant respectfully requests reconsideration and allowance in view of the above amendments and the following remarks.

In the Office Action dated September 15, 2009¹, claims 70-72, 84-86, 90-91, 98-105, and 118-121 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Comanicu et al. in view of Freifeld (U.S. Published Patent Application 2002/0191836). Claims 73-76, 92-95, and 106-109 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Comanicu et al. in view of Freifeld and further in view of Geodeon et al. (the article entitled "Applying Machine Vision and Electrical Component Manufacturing") Claims 77, 78, 96, 97, and 110-117 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Comanicu et al. in view of Freifeld, Geodeon and further in view of Edwards et al. (an article entitled "Machine Vision and Its Integration with CIM Systems and the Electronics Manufacturing Industry"). Claims 79-83 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Comanicu et al. in view of Freifeld and further in view of McCall et al. (U.S. Publish Patent Application 2004/0005396). Claims 87-89 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Comanicu et al. in view of Freifeld and further in view of Taylor III et al.

Applicant thanks the Examiner for the courtesies extended to the undersigned in the course of a telephone interview during the week of March 10, 2010, and further thanks the Examiner for agreeing to talk to the undersigned by phone upon Applicant's filing of the present Response. The present Application has gone through a number of Office Actions and Responses,

¹ Applicant does not acquiesce as to whether any of the references is "prior art," and does reserve the right to point out or otherwise make a case as to why one or more of the applied references is not prior art. For example, Applicant reserves the right to swear behind the publication date of the Comanicu et al. reference.

including different rejections based upon different references. The undersigned looks forward to the opportunity to work with the Examiner to try and clarify the issues and facilitate the allowance of the present Application.

Applicant notes that the current Application includes independent claims 70, 105, 118, 119, and 120. Each of the independent claims includes, among other limitations, limitations related to the interaction, over a network connection, of one computer to another, where the two computers collectively carry out certain machine vision functions. Those machine vision functions are specifically recited in the independent claims as being divided among the two machines in a manner not before done in the machine vision field.

By way of example, claim 70 recites apparatus including a collector computer and a transmitter. The collector computer is recited to include a vision tool selector configured to select, via a manual entry interface at the collector computer, at least one chosen vision tool from among plural selectable vision tools, and corresponding vision tool parameters corresponding to the chosen vision tool. The transmitter is configured to send, from the collector computer to a machine vision engine located remotely from the collector computer and via a communications network, at least two things. Those two things include (i) image data including at least one given image to be analyzed by the chosen vision tool, and (ii) the corresponding vision tool parameters. The corresponding vision tool parameters are the corresponding vision tool parameters that were received at the collector computer via the vision tool selector.

The present invention, per limitations recited in each of the independent claims now pending, relates to machine vision technology. Examples of machine vision technology include systems that automatically gauge part dimensions, guide robotic equipment, identify products, and inspect for defects of parts in industry. See, for example, the current Specification, page 1,

lines 19-22. Upon processing and analyzing an image of a given target, a result may be communicated by the machine vision system to an operator or to some other manufacturing equipment on a factory floor. The current Specification, page 1, line 27- page 2, line 2.

Machine vision software performs certain types of image analysis operations. Examples include pattern location algorithms, gauging, character recognition and image filtering. Specification, page 2, line 4-7.

The embodiments disclosed in the current Specification represent a paradigm shift in machine vision used in the field. For example, the Specification explains at page 2, line 14 that “machine vision systems are difficult to maintain in the field.” The Specification gives examples of some of these difficulties starting at, for example, page 2, line 15.

The disclosed embodiments are presented to solve a number of problems that occur with machine vision systems installed on a manufacturing production line. The objectives achieved include easing the installation of updates (Specification, page 2, line 15); easing the deployment of new licenses (Specification, page 2, lines 15-16); overcoming new software ‘tryout barriers’ (Specification, page 2, lines 16-19); and providing a needed alternative to copy prevention methods (Specification, page 2, line 20 et seq. (in this regard, reference is made to the Amendment submitted on May 26, 2008 where the paragraph at page 2, lines 22-23 of the Specification has been amended, and where replacement text has been provided at page 3.))

Applicant notes that the innovations presented by the present disclosure are quite significant. The present disclosure introduces changes to how machine vision is carried out in the field. Some of the reasons for these changes are explained in the Background of the Specification. In comparison, some recent communications technologies have been recognized as being innovative, such as Twitter and Facebook. Before Twitter was conceived, people were

communicating with each using text messaging, for example, with their cell phones. Twitter introduced a new way of employing text messaging (involving a server system that houses and maintains a history of messages to and from various people). This new way of employing text messaging has drastically changed the way people communicate today. Similarly, before Facebook was conceived, people already used websites and email to share photos and to keep in touch. Facebook's new way of employing these technologies (for example, providing a news feed showing what a group of friends is doing at a given moment, and housing emails) has completely changed how people communicate and stay in touch with each other.

With respect to the presently claimed invention, the Examiner might take the position that certain aspects of the invention involving remote control and remote communication with server-side processors using technologies that were known at the time of Applicant's invention. However, like Twitter and Facebook which employed existing technologies in a new way to realize a paradigm shift in how people communicate with each other, the present invention employs existing technologies in a new way in order to drastically ease the deployment of new machine vision software at the inspection site.

As noted above, the independent claims of the present Application provide specific limitations of the claimed invention related to the use of machine vision in the field. For example, vision tool selection and image collection have been separated into a collector computer, while analyzing is performed in a remote machine.

In the Office Action, the rejections on prior art grounds all state that the primary reference is Comanicu et al. which is directed to an image guided decision support system for pathology. This system is not a machine vision system used in the field, for example, such as the case with

the secondary references including Freifeld. Rather, the Comaniciu et al. system is directed to a medical application.

The Office Action asserts that Comaniciu et al. teach the various limitations recited in certain claims, including independent claims 70, 105, 118, 119 and 120, except that Comaniciu et al. fail to teach the recited selectable vision tools including selecting one or more given vision tools. With respect to this limitation, the Office Action asserts that Freifeld teaches this limitation and that would have been obvious to modify the Comaniciu et al. system to include this limitation in view of Freifeld. The only motivation recited for making this modification is so that the resulting system would “be able to perform multiple vision operations via multiple selectable vision tools”.

The problem with this motivation is that it is simply a description of the feature missing from the primary reference Comaniciu et al. and purportedly taught by Freifeld. This type of circular reasoning provides no basis in evidence existing at the time of Applicant’s invention that one would even consider making the asserted combination; and rather, suggests the improper use of Applicant’s own specification in hindsight. This is contrary to 35 U.S.C. §103, which itself requires that the determination of obviousness be at the time of Applicant’s invention.

Applicant claims a unique allocation of machine vision elements among separate and remote computers, and the existence of machine vision functions in a system such as that taught by Freifeld does not amount to a suggestion of what Applicant has claimed. In fact, even if one were to combine the references, the resulting system would include no more than a system that remotely performs feature matching.

The claimed limitation of the collector sending the image would not be met. The image is not sent from the client processor. Rather, extracted features are sent. (See Comaniciu et al. Fig.1.)

The claimed limitation of the collector sending a chosen vision tool and vision tool parameters would not be met. In Comaniciu et al., even if modified as asserted, extracted feature data (not vision tool choice and parameter data) are sent. (See Comaniciu et al., Fig. 1)

As can be seen viewing Comaniciu et al., the distribution of image processing functions among different processors over a network is only a general concept. The invention as claimed is more than this, and specifies a particular and unique allocation of machine vision elements among separate and remote computers.

Applicant notes that various secondary references are asserted in the Office Action to reject various claims. Those secondary references include Freifeld, Geodeon et al., Edwards et al., McCall, and Taylor III et al. Applicant submits that none of these references provides any teaching or suggestion or any other evidence, which would render Applicant's invention obvious. Accordingly, Applicant submits that each of the claims of the present Application meets the requirements of 35 U.S.C. Sections 102 and 103.

In view of the foregoing, reconsideration and allowance of all claims are respectfully requested. A Notice to that effect is earnestly solicited.

Should the Examiner have any questions concerning this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,

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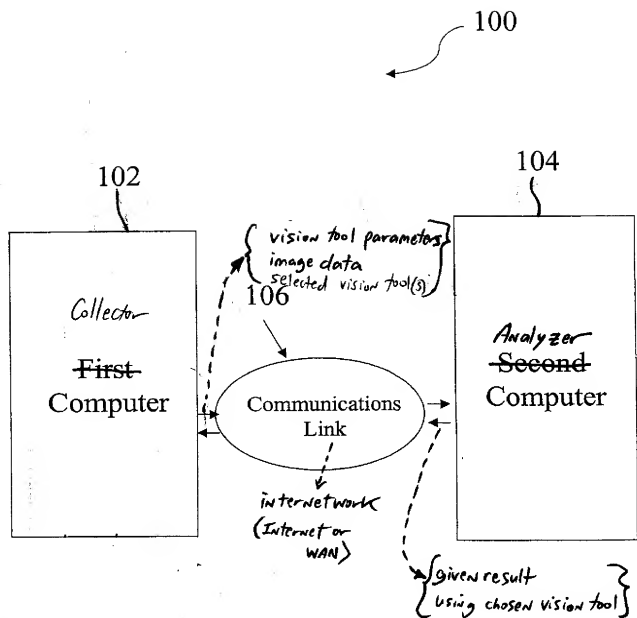


Figure 1